PCT/AU2004/001330

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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003905344 for a patent by CHOCOLATE GRAPHICS PTY LTD as filed on 01 October 2003.

WITNESS my hand this
Twelfth day of October 2004

J. Billingsley

JULIE BILLINGSLEY
TEAM LEADER EXAMINATION
SUPPORT AND SALES

P/00/009
Regulation 3.2

AUSTRALIA

Patents Act 1990

PROVISIONAL SPECIFICATION

Invention Title: "MANUFACTURE OF CHOCOLATE PRODUCTS"

The invention is described in the following statement:

TITLE: MANUFACTURE OF CHOCOLATE PRODUCTS

BACKGROUND OF THE INVENTION

1. Field of the Invention

THIS INVENTION relates to a method of manufacture of chocolate products.

The invention is particularly suitable for, but not limited to, the production of chocolate products having thin raised design(s) thereon in different colour(s) than the rest of the chocolate products.

2. Prior Art

International Publications WO 97/39636 (= PCT/AU97/00245) and WO 02/15707 (= PCT/AU01/01067) disclose respective methods for the manufacture of chocolate products with thin raised design(s), of at least one different colour chocolate thereon.

The manufacture of the mould plate, the cavities in which must accurately register with the engraved designs in the graphics plate, has been difficult.

Whilst the use of polyurethane or silicone rubber for the mould plates is known, there has been difficulty in accurate, repetitive manufacture of the mould plates.

SUMMARY OF THE PRESENT INVENTION

It is an object of the present invention to provide a method of manufacturing the chocolate with a thin raised design thereon to a high degree of accuracy and/or repeatability.

It is a preferred object to provide a method which is commercially economic.

Other preferred objects will become apparent from the following description.

In one aspect, the present invention resides in producing a former for a (preferably silicone rubber) mould plate, including the steps of:

assembling a former plate, having a planar surface bounded by a border corresponding to the external dimensions of the mould plate;

manufacturing a plurality of former shapes, corresponding to the recesses to be formed in the mould plate;

locating the former shapes in a template operable to locate the former shapes on the former plate;

applying adhesive to the former shapes and locating the former shapes on the former plate, using the template, to fix the former shapes to the former plate.

The template has holes, operable to receive at least a portion of the former shapes, the holes being aligned with engraved or otherwise formed images on a graphics plate to which the (rubber) mould plate is to be associated.

Preferably, the images on the graphics plate are formed by a laser engraver and are located thereon at spacings determined by

a template layout programmed in the computer software which controls the laser engraver.

The mould plate may be profiled to form a border around the engraved image.

In a second aspect, the present invention resides in a method of manufacturing chocolates with a thin design of at least one other colour thereon, the method including the steps of:

engraving a plurality of images, corresponding to the design, on a graphics plate at preselected locations (preferably by a laser engraver);

producing a mould plate former by the method of the first aspect;

producing a (preferably silicone) rubber mould plate using the mould plate former by placing a (preferably silicone) rubber solution in the mould plate former and allowing the solution to cure;

applying chocolate of at least a first colour to the graphics plate to fill the engraved image thereon, to form the design, and removing any excess chocolate;

locating the mould plate on the graphics plate with the recesses in the mould plate in register with the designs of the at least first colour chocolate;

filling the recesses with another colour chocolate;

allowing the chocolate to set; and

removing the final chocolates from the mould plate.

In a third aspect, the present invention relates to chocolates with a thin design thereon made by the method of the second aspect.

BRIEF DESCRIPTION OF THE DRAWINGS

To enable the invention to be fully understood, a preferred embodiment will now be described with reference to the accompanying drawings, in which:

FIG. 1 shows the assembly of the former plate;

FIG. 2 shows the engraving process for the former shapes;

FIG. 3 shows the original image, engraved images and final results for a thin design on different coloured chocolate bases;

FIG. 4 shows the assembly of the former for the mould plate;

FIG. 5 shows the completed former for the rubber mould plate.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A. BASIC PROCESS FOR MAKING RUBBER MOULD FORMERS

It is important to remember when selecting materials for the formers for the silicone rubber moulds that they must have a good

natural "release factor", as no release agents can be used within the former when moulding.

The formers are made up in two basic parts:

1. The former plate (assembled base plate and edges);

2. The former shapes (the shapes positioned within the former plate).

1. Former Plate (Fig. 1)

For construction of the former plate, a Shenkolite plastic is preferably used. The material is tough, available in various accurate thicknesses and needs no surface preparation, apart from the edges. This results in an accurate mould with a high degree of surface finish that requires no additional work. It is readily available, cut to size and is easily assembled.

An additional, but high preferable, benefit of Shenkolite, is a lack of adhesion (high release factor) with the silicone rubber moulding compound, thus allowing ease of mould removal and minimal risk of damage.

By using a template cut to the correct rubber mould dimensions, the former plate is easy to accurately assemble, and cost effective to produce.

Shenkolite strips are then placed onto the plate using "Loctite" (trade mark) glue to the exact size of the rubber mould plate required.

2. Former Shapes

The former shapes are also made from Shenkolite.

Shenkolite is machined from a sheet to form the initial former shape. Machining is accurate when using an engraver allowing mass-production and mirror-image consistency.

Engraving the shapes allows for variation in design, ie., scalloped or bevelled edges.

In the case of smaller designed shapes, a laser is used to straight-cut Shenkolite similar to the template allowing for a more rigid mould.

3. Engraved Images (Fig. 3)

The former shapes are used to form the recesses in the mould plate which will be in register with the images engraved on the graphics plate, eg., by a laser engraver sold under the "TROTEC" trade mark.

Fig. 3 illustrates the original photograph image from which the thin design is to reproduce; the respective images engraved on a graphics plate where the body of the chocolate is dark, milk or white chocolate; and the resulting chocolates produced by the method of the present invention.

4. Former Assembly (Figs. 4 and 5)

For accuracy and ease of pattern assembly, a "template" is utilised to position each former shape within the former

plate. This ensures accuracy for positioning the former shapes in relation to each other, the former plate and ultimately the graphics plate.

"Loctite" (trade mark) glue is a good adhesive as only a very thin layer is required leaving no gaps when assembling the former plates or the former shapes. Because the glue sets almost instantly, using a template will greatly reduce the risk of error.

The holes in the template, which receive the former shapes, are accurately cut out by a laser cutter to ensure that the recesses in the mould plate will accurately register with the engraved images on the graphics plate.

When the former is completed (see Fig. 5), the silicone rubber mould plate can be produced. A rubber/hardener solution is mixed and poured into the former and allowed to initially cure. Preferably, any air bubbles are removed from the solution (eg., by vacuum) before the initial cure is completed. Pressure may be applied to the rubber solution to fully fill the former, to prevent air creating voids in the mould plate.

The mould plate, when initially cured, is stripped from the former and may be finally trimmed to remove any unwanted material. The mould plate can then be finally cured, eg., in a curing oven.

5. Manufacture of the Chocolates

When the graphic plate and the rubber mould plate(s) have been prepared, the chocolates can then be produced.

A thin layer of chocolate, of a first colour, is applied to the graphics plate to (preferably overfill) the images engraved therein and any excess chocolate is removed, eg., by a scraper.

The mould plate is accurately located on the graphics plate and secured thereto - at least by surface adhesion between the plates, with additional clamping applied if required.

The recesses in the mould plate, accurately in register with the first colour chocolate design, are filled with a second colour chocolate.

The chocolate is allowed to set, eg., in a cooling tower or refrigerator before being released from the mould plate and graphics plate.

If preferred, the mould plate may be trimmed to enable a coloured chocolate border, of the same or different colour, to be formed around the designs of the first chocolate colour.

The use of the former, with the former shapes accurately located thereon by the template, ensures accurate register of the recesses in the mould plate with the engraved images on the graphics plate.

With all the above processes, the computer system used for designing and engraving can be utilised in several ways:

1. A saving on design costs where compatible computerised systems are used for contracted machining or laser cutting.

2. By modifying the engraving program for the same graphics plate, the design of templates to assemble the former, or to manufacture former shapes, will be very accurate ensuring relativity of all components is maintained at each stage.

The present invention enables the accurate manufacture of the mould plates, and thereby manufacture of chocolates of high quality, where the thin raised designs are accurately located on the chocolates (with or without an optional border).

Various changes and modifications may be made to the embodiments described and illustrated without departing from the present invention.

DATED this first day of October 2003.

CHOCOLATE GRAPHICS PTY LTD

By its Patent Attorneys

FISHER ADAMS KELLY

FORMER PLATE

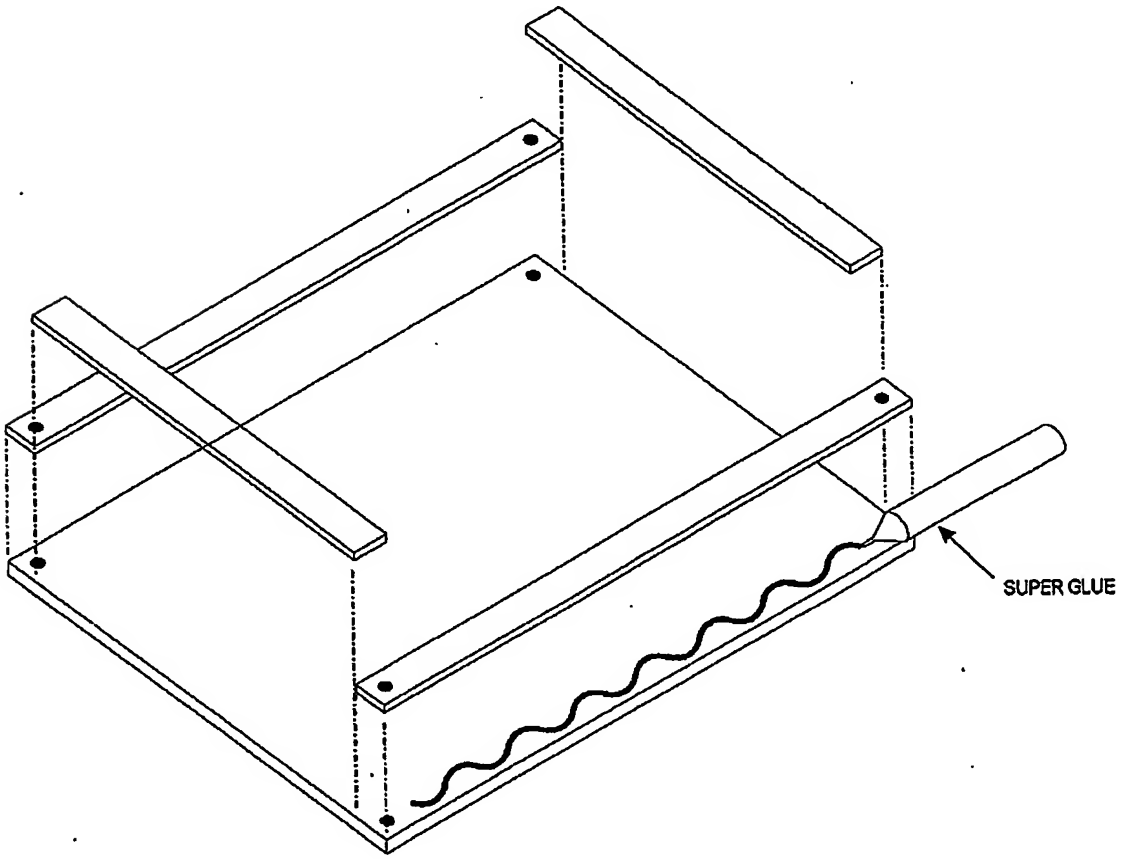
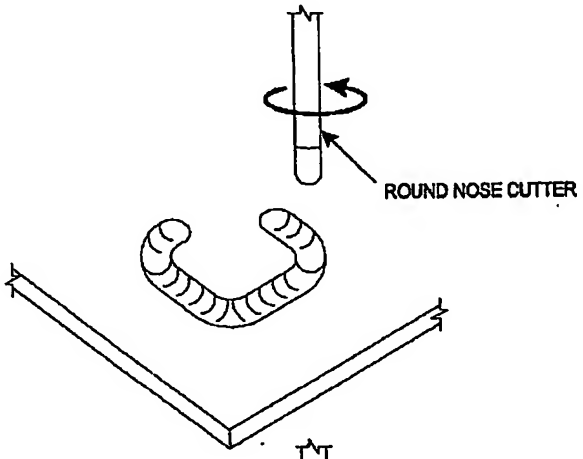


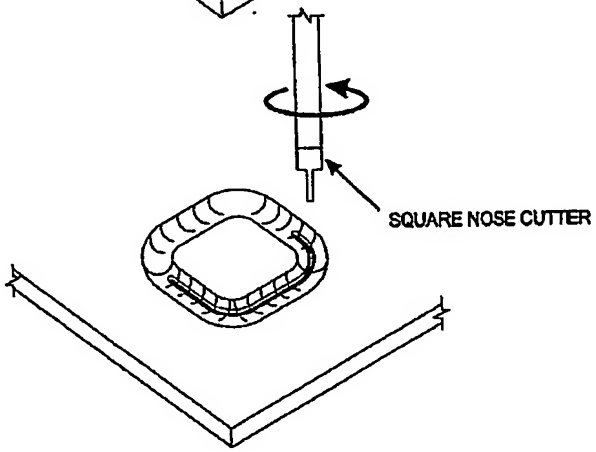
FIGURE 1

ENGRAVING PROCESS FOR FORMER SHAPES

STEP 1
INITIAL GROOVE FOR
CURVED PORTION
OF PATTERN SHAPE



STEP 2
FINAL CUT OUT
OF PATTERN SHAPE



STEP 3
ENGRAVED SHAPE
READY FOR FINISHING

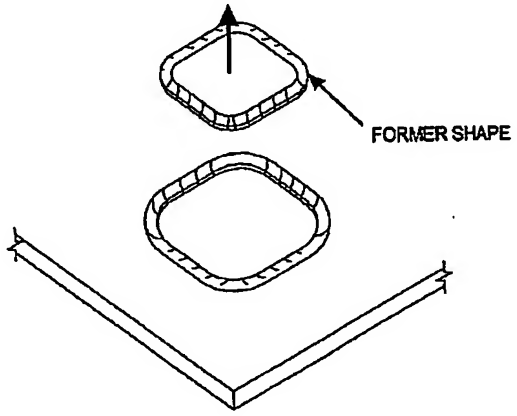
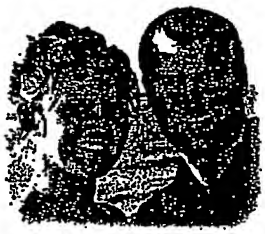


FIGURE 2

Engraved Image / Resultant Design..



Original

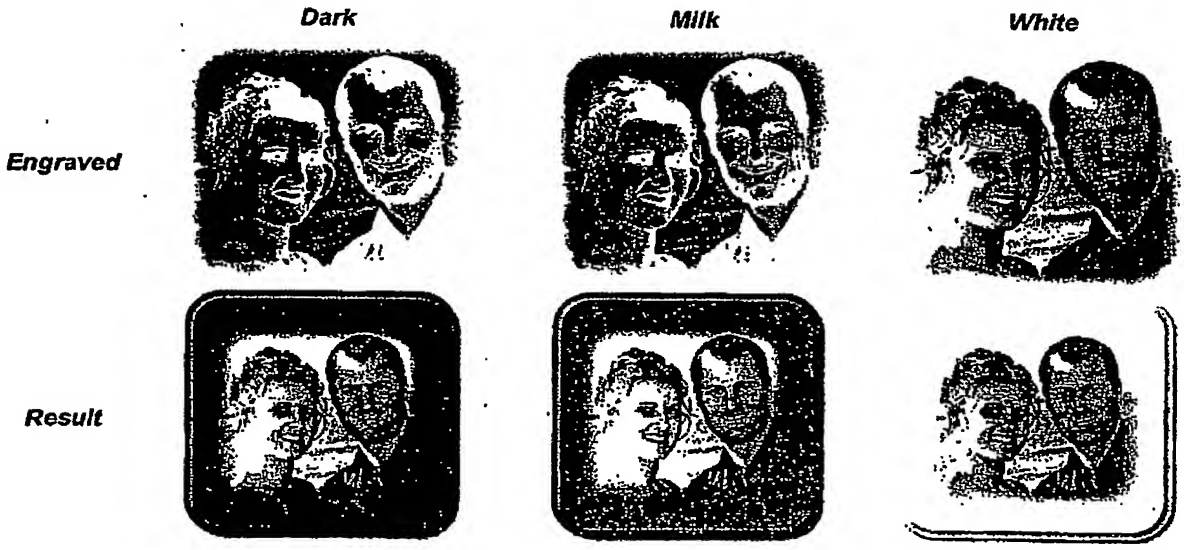


FIGURE 3

ASSEMBLY OF FORMER

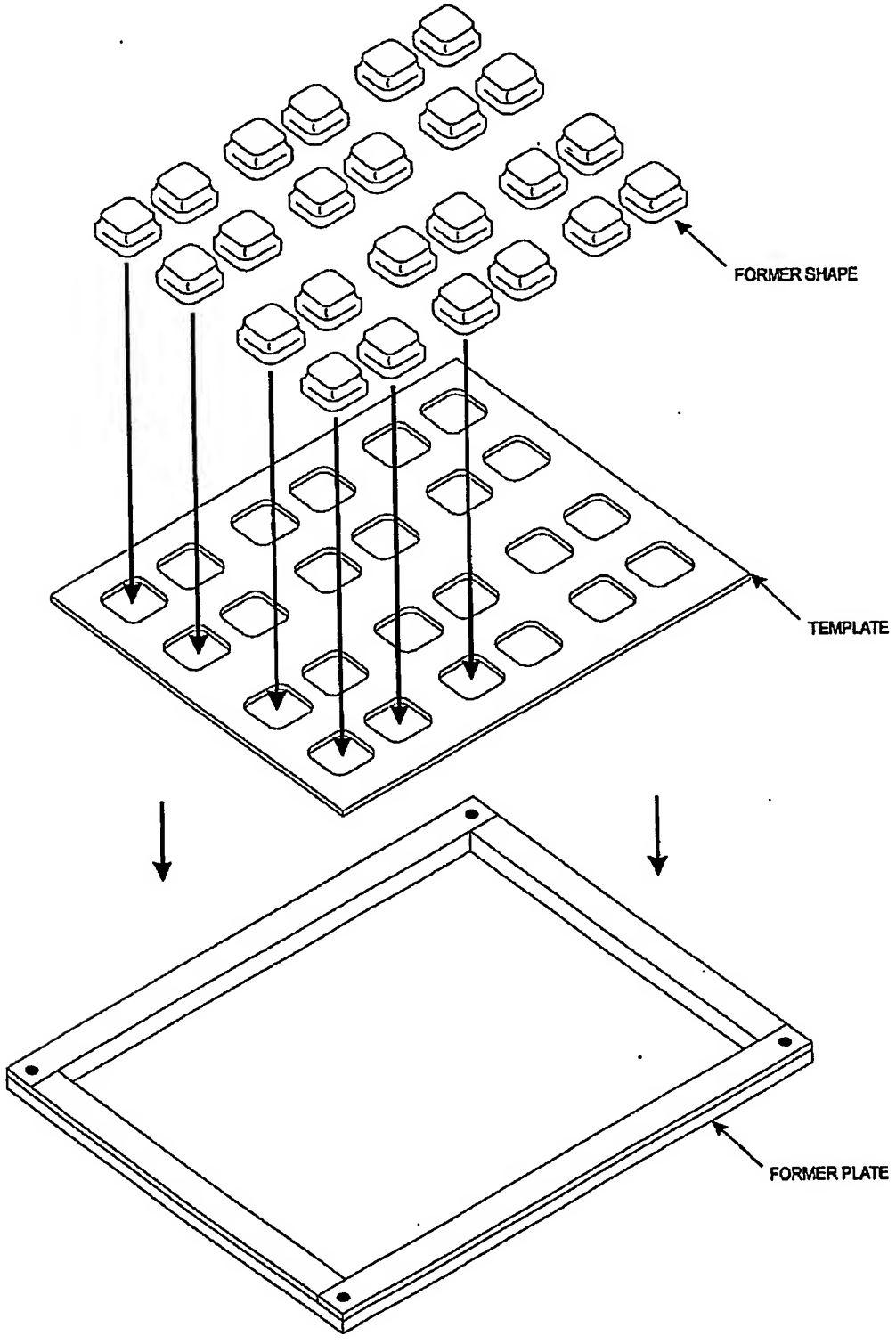


FIGURE 4

COMPLETED FORMER

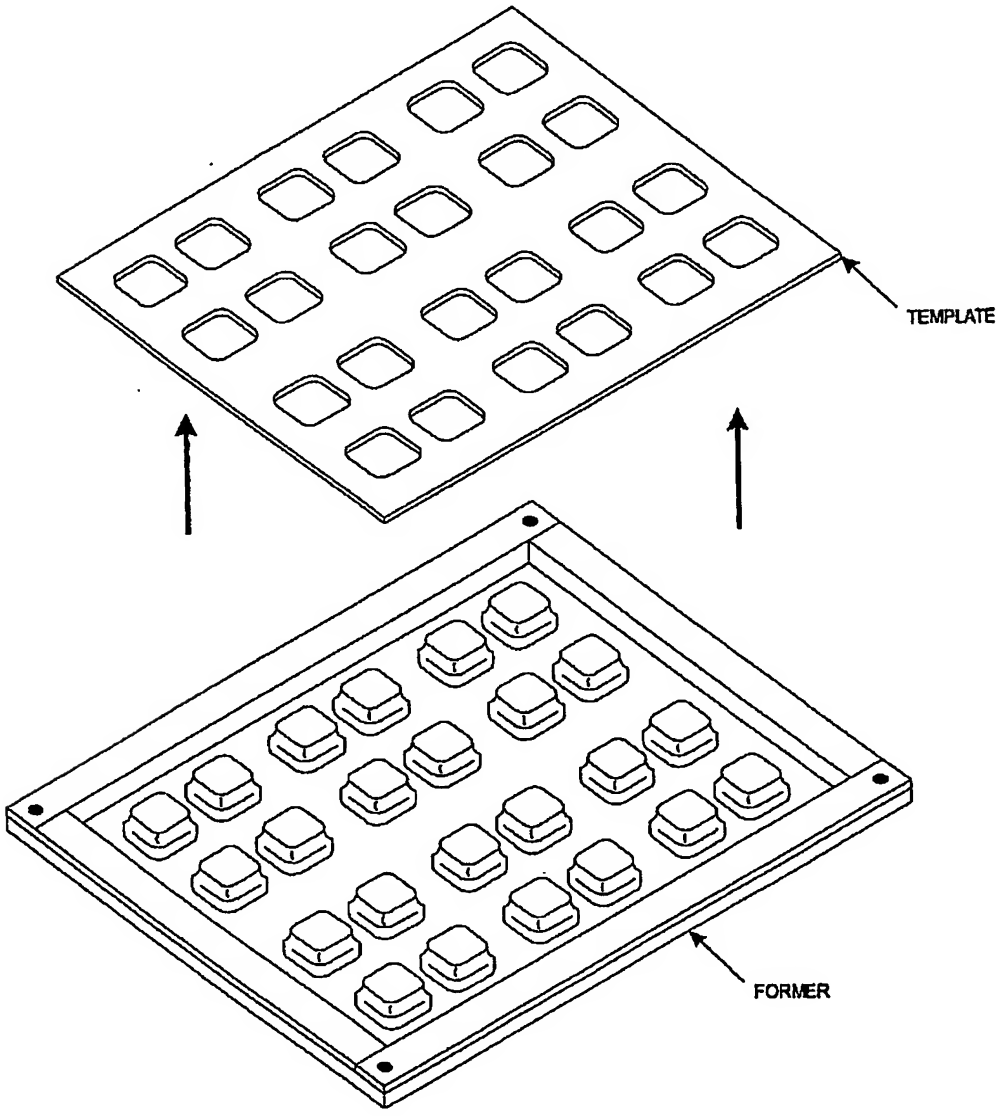


FIGURE 5